

Report Date: 30 Apr 2012

**Summary Report for Individual Task
551-88L-2048
Maintain a Portable Fire Pump
Status: Approved**

DISTRIBUTION RESTRICTION: Approved for public release; distribution is unlimited.

DESTRUCTION NOTICE: None

Condition: Aboard a vessel, at sea, at anchor or moored alongside a pier, day or night, under all sea and weather conditions, using the appropriate technical manuals, and while wearing appropriate PPE (i.e. hearing protection, Nitrile gloves, eye protection, etc.) with no injuries and/or damage to equipment.

Standard: The Soldier knows and can correctly conduct operational maintenance, daily maintenance, monthly maintenance, three month maintenance, six month maintenance, and twelve month maintenance procedures pertaining to the P-100 Portable Fire Pump.

Special Condition: None

Special Standards: None

Special Equipment:

Safety Level: Medium

MOPP:

Task Statements

Cue: None

DANGER
None

WARNING
None

CAUTION
None

Remarks: None

Notes: None

Performance Steps

1. Perform operational maintenance.

a. Drain and flush the pump unit. Each time the pump is used to pump seawater, or brackish water, the pump must be flushed with fresh water to prevent salt crystals and oxidation from binding the pump shaft and other pump components that fit together with minimal clearances.

(1) Preferred method of flushing pump unit:

(a) Open Wye-gate discharge valve and release foot valve flapper to empty the suction hose.

(b) Open pump casing drain valve and allow pump to stand upright for 3 minutes.

(c) Close pump casing drain valve and Wye-gate valve.

(d) Route suction and discharge hoses to a clean 55 gallon drum filled with fresh water.

(e) Start and operate pump unit in accordance with Chapter 2, Operation. With a 50 pounds per square inch gauge (psig) minimum discharge pressure, operate pump unit for 3 to 5 minutes. Discharge water continuously during operation and replenish the water in the drum while flushing.

(f) Stop the pump unit and repeat steps a) and b).

(g) Disconnect and stow all hoses.

(h) If temperature above 32 degrees F (0 degrees C), spray silicone lubricating compound into suction and discharge ports to coat impeller and pump volute.

(i) Close pump casing drain valve, and replace thread protector caps on suction and discharge fittings (if applicable).

(j) If temperature is below 32 degrees F (0 degrees C), restart pump unit without connecting the suction and discharge hoses. Open the primer line valve and shift the exhaust primer lever to the prime position for 5 seconds to evacuate any remaining water from the priming line. Immediately stop the pump unit.

(k) Close pump casing drain valve, and replace thread protector caps on suction and discharge fittings (if applicable).

(l) Return the pump unit to a state of readiness.

(2) Alternate method for flushing pump unit.

(a) Open Wye-gate discharge valve and release foot valve flapper to empty suction hose.

(b) Open pump casing drain valve and allow pump to stand upright for 3 minutes.

(c) Close pump casing drain valve and Wye-gate valve.

(d) Connect the pump unit to a fresh water source.

(e) While fresh water is flowing through the pump, depress the compression release lever and slowly pull the recoil starter rope. Repeat 7-10 times to adequately flush any residual seawater from the pump.

(f) Repeat step a) and b).

(g) Disconnect and stow all hoses.

(h) If temperature is above 32 degrees F (0 degrees C), spray silicone lubricating compound into suction and discharge ports to coat impeller and pump volute.

(i) Close pump casing drain valve, and replace thread protector caps on suction and discharge fittings (if applicable).

(j) If temperature is below 32 degrees F (0 degrees C), restart pump unit without connecting the suction and discharge hoses. Open the primer line valve and shift the exhaust primer level to the prime position for 5 seconds to evacuate any remaining water from the priming line. Immediately stop the pump unit.

(k) Return the pump unit to a state of readiness.

b. Visually inspect pump unit.

(1) Inspect pump unit frame.

(a) Inspect skids for cracks or damage.

(b) Inspect carrying handles for proper operation, damage, lose pins or loose mounting hardware.

(c) Inspect engine mounts for cracks, damage or lose bolted connections.

(2) Inspect pump suction, discharge and exhaust threads for damage.

(3) Inspect hoses, tubes, fittings and clamps.

(a) Inspect for loose or damaged clamps and fittings.

(b) Inspect hoses and tubes for signs of leaks, cracks, kinks, bulges or deterioration.

(4) Inspect recoil starter.

(a) Inspect starter housing for cracks or loose mounting hardware.

(b) While holding the compression release lever down, slowly pull starter rope fully out and inspect the rope for wear.

(c) Inspect starter rope guide for cracks or damage.

(5) Inspect the following controls and indicators for damage and proper operation:

(a) Engine speed lever and thumbscrew assembly.

(b) Throttle linkage assembly.

(c) Fuel cock valve.

(d) Exhaust primer shut off valve.

(e) Pump drain valve.

(f) Compound pressure gage.

(g) Fuel level tube.

(6) Inspect exhaust priming assembly.

(a) Inspect primer exhaust valve assembly for damage.

(b) Inspect exhaust valve discharge for damage or carbon buildup that would prevent exhaust priming.

(c) Inspect exhaust priming ejector is free from carbon buildup or obstructions.

(7) Inspect air cleaner for damage or corrosion.

(8) Inspect engine assembly.

(a) Inspect for leaking gaskets, fittings or seals.

(b) Inspect for corrosion of engine castings, covers and mounting and assembly hardware. Inspect stiffening bracket for loose mounting hardware.

(c) Inspect flywheel cover and spray shield for damage, corrosion or loose mounting hardware.

(9) Inspect spare tool kit for following items:

(a) Adjustable wrench.

(b) Combination wrenches, 10mm, 12mm, 13mm, 17mm.

(c) Pliers.

(d) Tool pouch.

c. Inspect idle equipment for freedom of movement. Manually turn engine/pump shaft.

(1) Ensure the fuel cutout valve at the bottom of the fuel tank is in the S (closed) position.

(2) Ensure the throttle lever thumbscrew tightened in the STOP position.

CAUTION

Manual turning of the shaft is performed to reduce the compression of the pump shaft packing. Do not operate the pump unit dry. Do not start the pump unit when manually turning the engine/pump shaft. Immediately secure the engine if the engine starts when performing this procedure in accordance with emergency stop procedures.

(3) Slowly pull out starter recoil handle until strong resistance is felt and return handle to initial position.

(4) Push down the compression release lever.

(5) Slowly pull out the starter recoil handle for three full extensions of the starter rope.

(6) Pull up the compression release lever.

(7) Return pump unit to readiness condition.

d. Lubricate the pump unit throttle pivot points:

(1) Apply a thin coat of grease to throttle lever pivot, governor lever pivot and compression release pivot.

(2) Operate throttle lever to work grease into pivot points.

(3) Operate compression release lever to work grease into pivot points.

(4) Remove excess lubricant.

2. Perform daily maintenance.

a. Selection of fuel oil:

(1) The pump unit is able to operate using commercial Grade 2 diesel fuel, NATO Symbol F-76 or JP-5.

(2) Keep dust and water out of the fuel.

CAUTION

Only use the recommended diesel fuel oil. Use of non-recommended fuel may cause clogging in the fuel oil strainer, fuel injection pump, and fuel injection nozzle.

(3) Fuel should have a cetane value of more than 45 in order to prevent difficult starting, misfiring, and white exhaust smoke.

(4) Diesel fuel oil substitutes are not recommended; they may be harmful to the fuel system components.

(5) Fuel should be free of water or dust because these cause trouble in the fuel injection pump and nozzle.

b. Check and replenish fuel oil.

(1) Remove fuel tank cap.

CAUTION

Do not fill fuel tank beyond the top of the red plug inside the fuel tank strainer.

(2) Fill fuel tank and inspect for leaks, (refer to Figure 551-88L-2048_01)

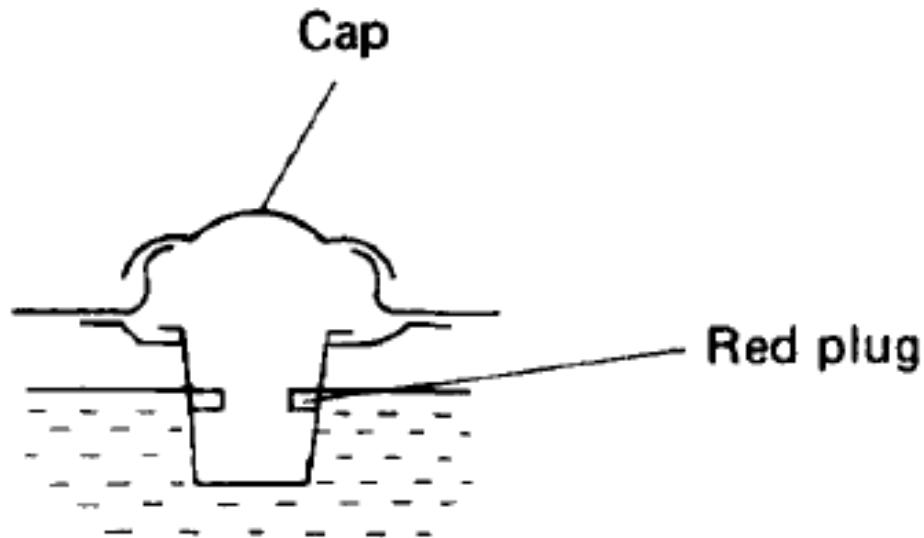


Figure 551-88L-2048_01
Fuel tank cap

(3) Replace fuel tank cap.

(4) Return pump unit to readiness condition.

c. Check and replenish lube oil.

WARNING

The engine may be damaged if operated with insufficient lube oil. It is also dangerous to supply too much lube oil to the engine because a sudden increase in engine rpm could be caused by its combustion. Always check the lube oil level before starting the engine and refill if necessary.

CAUTION

Inspect and fill engine oil level on a level surface with engine stopped. Checking or filling oil level on a non level surface will result in a false reading. Overfilling with oil will result in excessive oil consumption, high oil temperatures, possible crankcase explosion and engine damage. Insufficient oil levels will result engine seizure.

(1) Remove engine cap with lube oil gauge.

(2) Fill engine with oil to the mouth of the filler port, (refer to Figure 551-88L-2048_02).

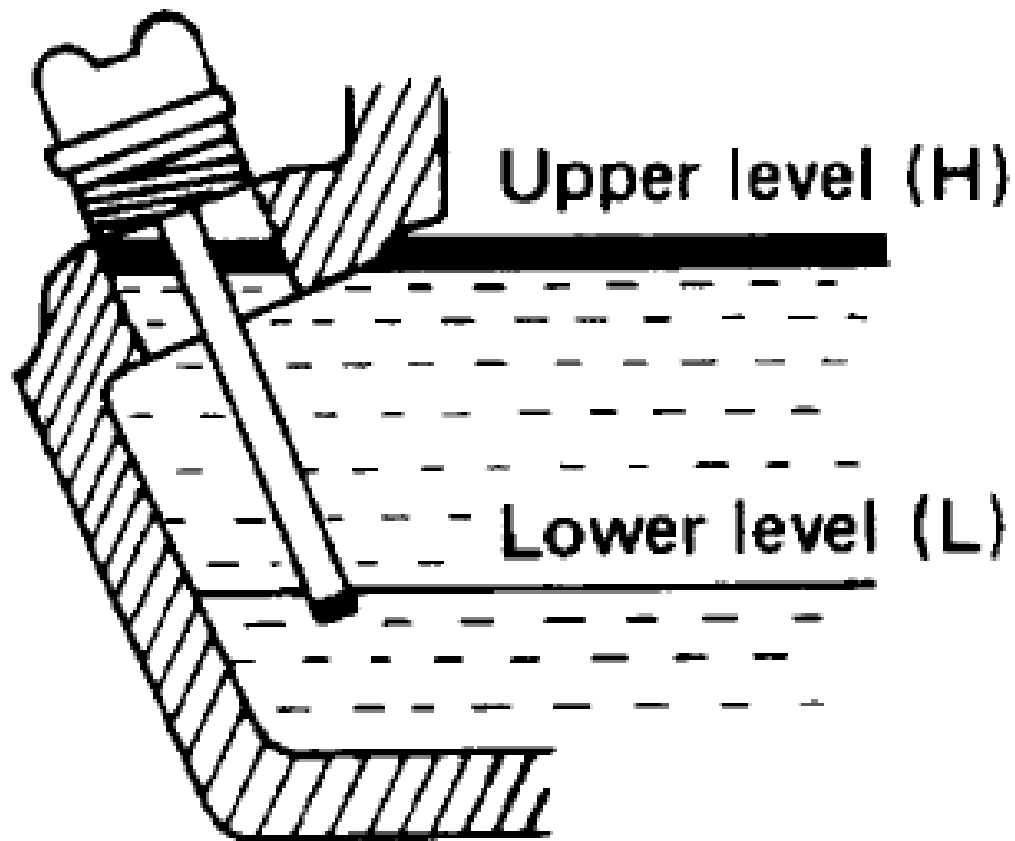


Figure 551-88L-2048_02
Engine oil level

- (3) Replace cap with lube oil gauge and tighten.
3. Perform maintenance every month or 20 hours of operation.
 - a. Drain fuel from fuel oil tank.
 - (1) Loosen drain plug at base of fuel tank and drain fuel from fuel tank (refer to Figure 551-88L-2048_03.

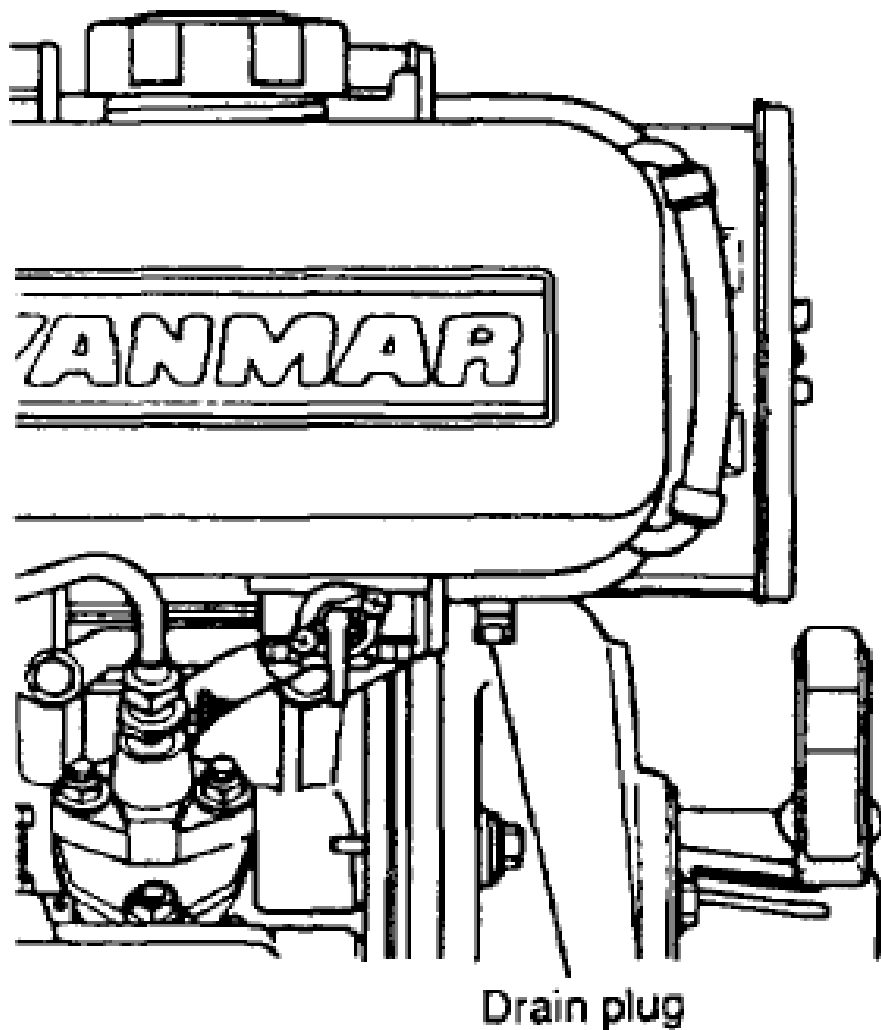


Figure 551-88L-2048_03
Drain plug

- (2) Replace fuel tank drain plug and tighten.
- (3) Remove fuel tank cap.

CAUTION

Do not fill fuel tank beyond the top of the red plug inside the fuel tank strainer.

- (4) Fill fuel tank and inspect for leaks.
 - (5) Replace fuel tank cap.
 - (6) Return pump unit to readiness condition.
- b. Check for oil leakage.
- (1) Set up and start pump in accordance with standard operating procedures.

(2) Let pump come up to normal operating temperature.

(3) Check for oil leaks in the areas of:

(a) Valve cover gasket.

(b) Crankcase gasket.

(c) Cylinder head.

(d) Crankshaft seals.

(e) Oil drain plugs.

(f) Oil dip stick.

4. Perform maintenance every 3 months or 100 hours of operation.

a. Change engine lube oil.

(1) Place a suitable container under the oil drain plug.

(2) Remove engine oil drain plug from either side of cylinder block and drain oil while engine oil is warm.

(3) Tilt the pump unit toward the oil drain to get all the oil out.

(4) Reinstall plug and tighten.

(5) Wipe up any residual oil on outside of pump.

(6) Remove engine cap with lube oil gauge.

(7) Fill engine with oil to the mouth of the filler port.

(8) Replace cap with lube oil gauge and tighten.

(9) Return pump unit to readiness condition.

b. Check air cleaner element, (refer to Figure 551-88L-2048_04).

(1) Remove the wing nut and air cleaner cover.

(2) Remove air cleaner element, inspect for dirt, debris, holes, and tears.

(3) Using a lint free rag, wipe clean inside of air cleaner housing.

(4) Install new air cleaner element, if necessary.

(5) Replace air cleaner cover and tighten wing nut.

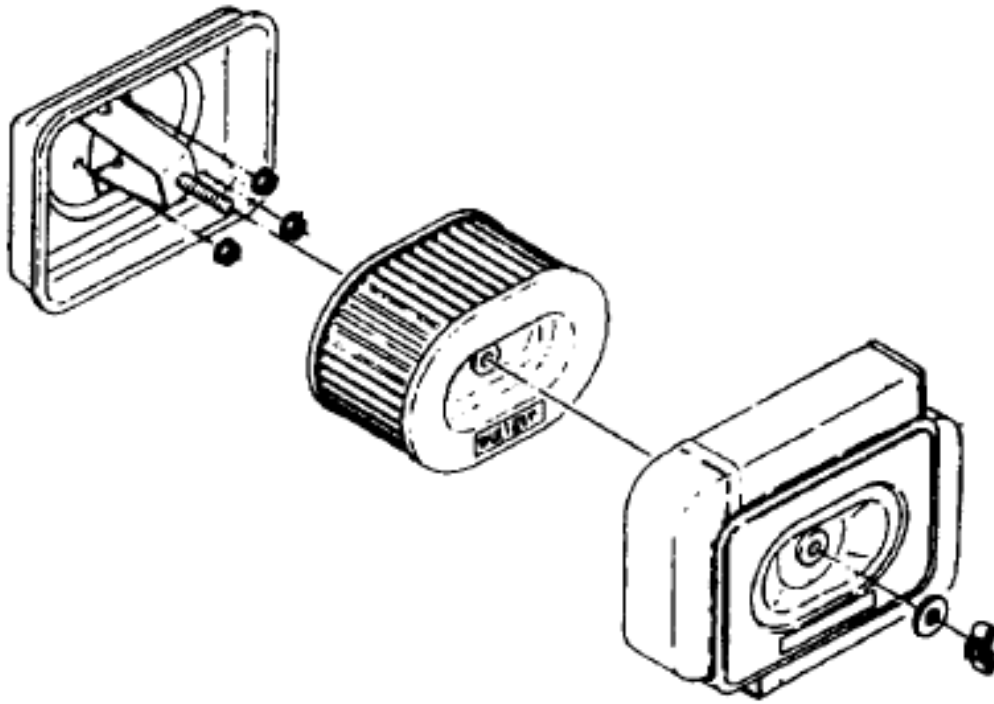


Figure 551-88L-2048_04
Air filter assembly

- (6) Return pump unit to readiness condition.
- 5. Perform maintenance every 6 months or 500 hours of operation.
 - a. Clean the fuel tank strainer and fuel filter, (refer to Figure 551-88L-2048_05).
 - (1) The fuel filter also has to be cleaned regularly to ensure maximum engine output.
 - (2) Drain fuel from fuel tank through fuel tank drain plug.
 - (3) Replace fuel tank drain plug.
 - (4) Remove nuts at fuel cock on the underside of the fuel tank.

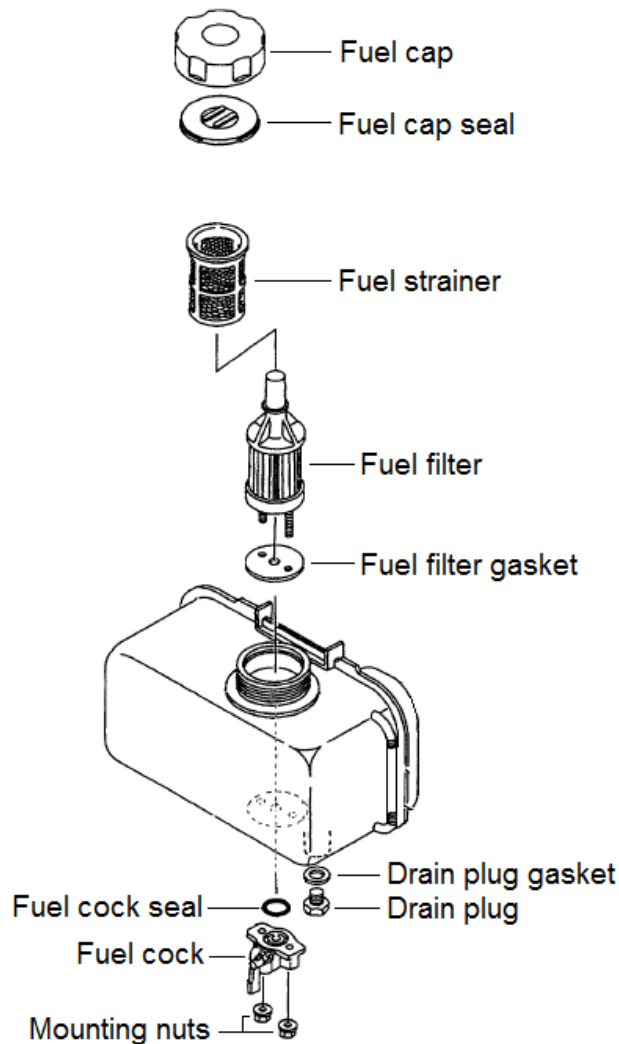


Figure 551-88L-2048_05
Fuel tank assembly

(5) Remove fuel tank cap.

(6) Lift the fuel strainer and fuel filter with gasket out of the tank through the fuel fill opening.

(7) Clean fuel strainer in clean fuel of the type used in the fuel tank, replace if damaged.

(8) Clean the fuel filter in clean fuel of the type used in the fuel tank and inspect it.

(a) The fuel filter uses an element of nominal filterable particle diameter of 5 microns.

(b) During the periodical inspection of this part, check the element for break, separation from the frame to which it should be bonded, stoppage, etc.

(c) If a defect is found, replace it with new one.

(9) Replace the fuel filter with gasket and fuel strainer through the fuel fill opening.

(10) Tighten nuts for fuel filter assembly at the fuel cock on the underside of the fuel tank.

(11) Fill fuel tank and inspect for leaks.

(12) Replace fuel tank cap.

(13) Return pump unit to readiness condition.

b. Change air cleaner element.

(1) Remove the wing nut and air cleaner cover.

(2) Remove air cleaner element.

(3) Using a lint free rag, wipe clean inside of air cleaner housing.

(4) Install new air cleaner element.

(5) Replace air cleaner cover and tighten wing nut.

(6) Return pump unit to readiness condition.

c. Clean lube oil strainer.

WARNING

Engine surfaces will be hot immediately after securing the pump. Allow sufficient time for external surfaces to cool before handling hot engine components.

CAUTION

Avoid prolonged contact with, or inhalation of, cleaning solvents. Avoid use near heat or open flame and provide adequate ventilation.

(1) Remove engine oil drain plug from either side of cylinder block and drain oil while engine oil is warm.

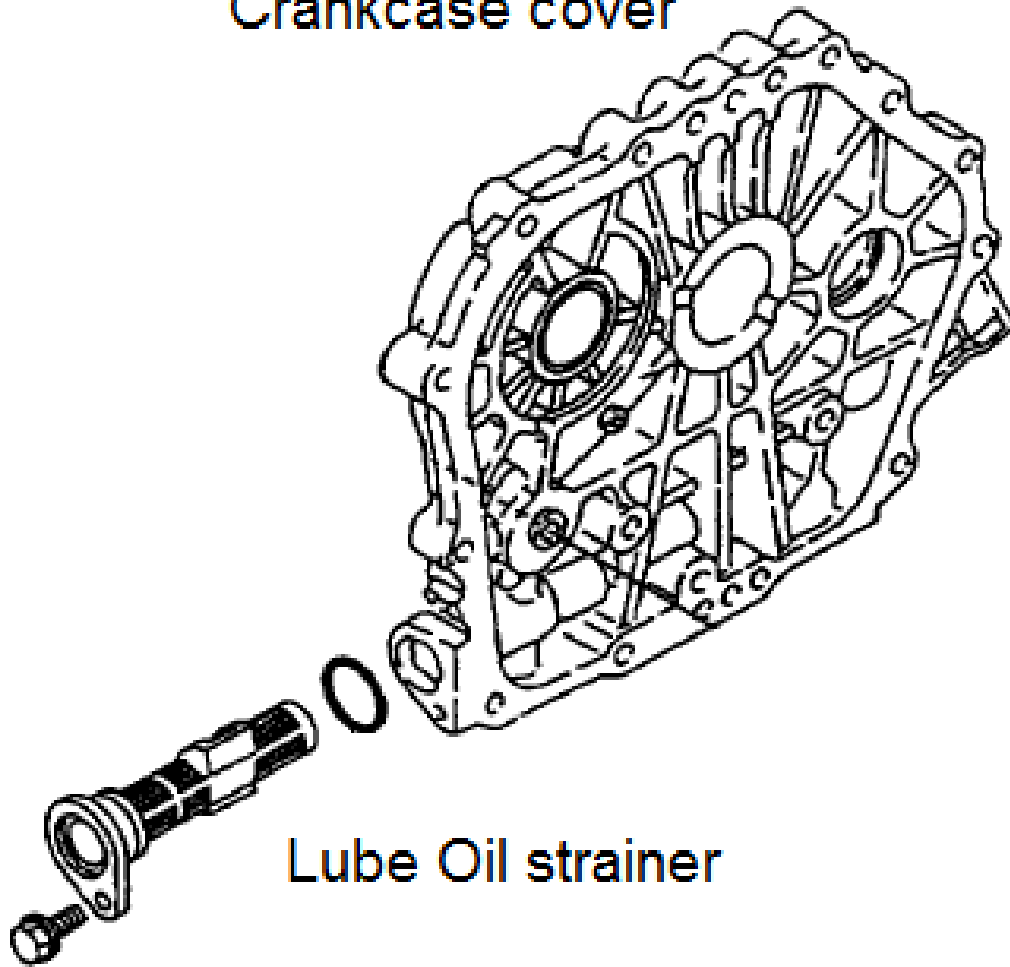
Note: Be sure to drain the oil while the engine is warm. Later, it may be difficult to drain the oil completely.

(2) Reinstall plug and tighten.

Note:

(3) Loosen lock bolt on strainer cover, (refer to Figure 551-88L-2048_06).

Crankcase cover



Lube Oil strainer

Figure 551-88L-2048_06
Lube oil strainer

- (4) Remove strainer from engine.
 - (5) Inspect strainer for damage and replace if damaged.
 - (6) Remove O-ring, clean strainer in cleaning solvent and allow to dry.
 - (7) Replace O-ring.
 - (8) Reinstall clean strainer with O-ring.
 - (9) Install lock bolt on strainer cover and tighten.
 - (10) Renew engine lube oil.
- d. Check fuel piping replace if necessary.
 - e. Check and tighten engine parts.
6. Perform maintenance every 12 months or 1000 hours of operation.

a. Replace fuel filter.

- (1) Drain fuel from fuel tank through fuel tank drain plug.
- (2) Replace fuel tank drain plug.
- (3) Remove nuts at fuel cock on the underside of the fuel tank.
- (4) Remove fuel tank cap.
- (5) Lift the fuel strainer and fuel filter with gasket out of the tank through the fuel fill opening.
- (6) Remove fuel filter and discard.
- (7) Replace the new fuel filter with a new gasket and fuel strainer through the fuel fill opening.
- (8) Tighten nuts for fuel filter assembly at the fuel cock on the underside of the fuel tank.
- (9) Fill fuel tank and inspect for leaks.
- (10) Replace fuel tank cap.
- (11) Return pump unit to readiness condition.

b. Check intake and exhaust valve clearances.

Note: The valve clearance should be adjusted while the engine is in the cold state.

CAUTION

Make sure each cylinder is in top dead center (TDC) before adjusting the clearance. This way the intake/exhaust rocker arms will not move even if the crankshaft is turned clockwise or counterclockwise from the TDC mark.

- (1) Rotate engine until cylinder is at top dead center.
- (2) Remove the valve rocker arm cover.
- (3) Measure the clearance between the valve stem and the rocker arm end with a thickness gage, (refer to Figure 551-88L-2048_07).
 - (a) Clearance in the cold state should be between 0.10 to 0.15 mm.
 - (b) Adjust if necessary.

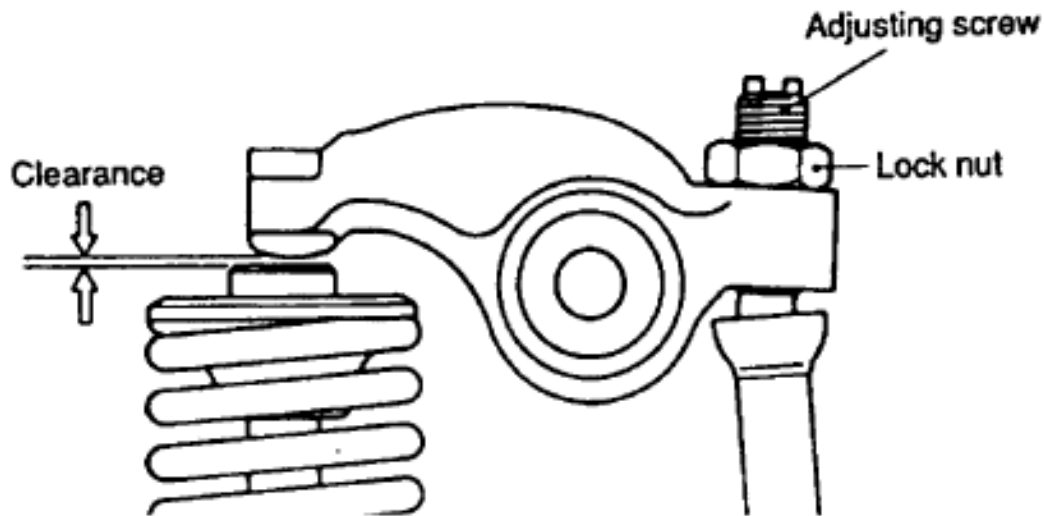


Figure 551-88L-2048_07
Valve clearance adjustment

(4) Replace the valve rocker arm cover using a new gasket.

c. Test operate pump unit at a suction lift less than 20 feet.

Note: Before operating the P-100, be sure that all suction hose connections between the foot valve and the pump are tight, and that the strainer is completely submerged in water. If the exhaust primer fails to lift water, or if the discharge shows an uneven stream, the most probable cause is air leaking into the suction through a poor connection. Be sure to support the suction hose so that the weight of the hose will not be borne by the pump casing. Make certain that the foot valve is completely submerged during the entire period of pump operation; otherwise severe damage to the equipment may result.

CAUTION

A high spot and/or close radius bend in suction line may form an air trap and prevent complete pump priming. Always attach suction hose to pump prior to placing hose in water.

(1) Using spanner wrench, attach a 3 suction line to pump suction fitting. Suction line must consist of required number of 10' lengths of suction hose with a foot valve/strainer unit on submerged end. Make sure all connections are secure, (refer to Figure 551-88L-2048_08).

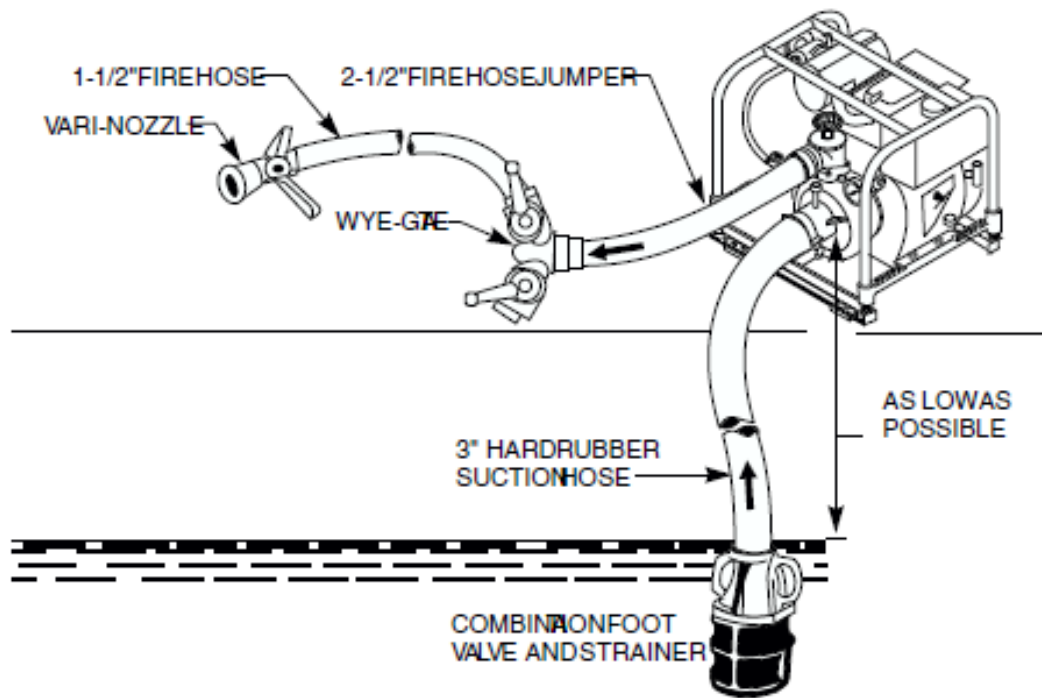


Figure 551-88L-2048_08
Suction lift less than 20 feet

(2) Carefully lower hoses into water making sure foot valve/strainer unit remains submerged at least 1 foot throughout operating period. Make sure suction line slopes continuously downward from pump intake to water.

(3) Attach Wye-gate or Tri-gate to pump discharge fitting. Wye-gate or Tri-gate may be attached to pump discharge fitting by using a short 2-1/2 dia. x 18 extension hose.

(4) Attach one or two 1-1/2 inch hoses and nozzles.

Note: 1-1/2 inch nozzles have a flow of 95 to 125 gpm at 100 psi.

WARNING

Do not operate pump in an enclosed area without exhaust hose connected and routed safely to outside atmosphere. Exhaust gases contain carbon monoxide, which is odorless and poisonous, and can cause injury or death when inhaled. High temperatures exist in vicinity of exhaust hose connection at engine and at exhaust hose discharge. Wear firefighters gloves at all times when handling exhaust hoses.

(5) If pump unit is to be operated in a poorly ventilated area, attach a maximum of 20' of insulated exhaust hose to exhaust fitting.

(a) Do not submerge discharge end of exhaust hose in water.

(b) Regularly check exhaust hose connections for leaks.

CAUTION

Fuel must be f-76 or jp-5, filtered clear and bright. Do not fill fuel tank beyond the top of the red plug inside the fuel tank strainer.

(6) Inspect engine fuel level.

(a) Fill if low.

(b) Do not overfill.

(c) Do not put oil in fuel tank.

CAUTION

Inspect engine oil level on a level surface with engine stopped. Checking oil level on a non-level surface will result in a false reading. Overfilling with oil will result in excessive oil consumption, high oil temperatures, possible crankcase explosion and engine damage. Insufficient oil levels will result engine seizure.

(7) Inspect engine oil level. Fill if low. Do not overfill.

(8) Close discharge valve at discharge head.

(9) Set fuel isolation valve at bottom of fuel tank to O (open) position.

(10) Place throttle lever so indicator is in START position and tighten thumbscrew.

Note: Primer shut-off valve is open when lever is in line with hoseline.

(11) Open primer line shut-off valve between primer ejector assembly and pump suction.

(12) Slowly pull out starter recoil handle until strong resistance is felt and return handle to initial position.

(13) Push down the compression release lever.

WARNING

Personnel shall wear approved hearing protective devices when engine is operating.

(14) Pull the recoil starting handle briskly with both hands to start engine.

(15) If engine does not start repeat steps 12) through 14).

CAUTION

Do not continue to operate the pump unit if priming cannot be achieved within two minutes. Shutdown engine and troubleshoot for cause of failure to achieve prime.

(16) Once the engine is running, set the engine throttle control to the RUN position.

Note: Start the engine and run at a fast idle to prime with lifts less than 10 feet. Start the engine and run at full throttle to prime with 10 to 22 foot lifts.

(17) Shift the exhaust valve to the prime position blocking the main exhaust opening. The exhaust valve is in the prime position when the handle is horizontal.

(18) When a steady stream of water appears at the discharge of the priming jet, close the primer line shut-off valve and return the engine exhaust valve to the normal position.

(19) Open the pump discharge valve.

(20) Repeat the priming operation if the pump fails to hold its prime. If the pump does not deliver water within two minutes, stop the engine and check for air leaks at suction connections and/or the pump packing gland. Or failure of the priming jet to produce vacuum.

CAUTION

Do not operate pump unit continuously without discharging water. Operation of the pump with a closed discharge valve will result in overheating of and damage to the pump. At a minimum, bleed a small amount of water from a secondary discharge hose when the pump is operating and the primary hose and nozzle are secured.

(21) Slowly open a single 1-1/2 hose discharge line on Wye-gate or Tri-gate valve and discharge water from hose nozzle.

Note: Pump shaft packing drip rate should be 5-60 drops per minute (60 drops per minute maximum). Lower drip rate indicates excessive tightening of pump shaft packing. Higher drip rate indicates insufficient packing adjustment. Adjust pump packing drip rate per stuffing box adjustment section (U.S. Navy users accomplish Maintenance Requirement Card (MRC) R-3, if required).

CAUTION

Observe exhaust smoke color after priming has been achieved and pump is discharging water. Exhaust smoke color should become clear or light bluish as the engine warms up. In high load situations, the continued appearance of black exhaust smoke after the engine has warmed up indicates overfueling of the engine. Overfueling of the engine will cause fuel dilution of the lube oil and engine damage with continued operation. Adjustment of the throttle to reduce engine load is required if evidence of engine overfueling is observed.

(22) Observe pump shaft packing drip rate with pump unit discharging water. Packing drip rate should be 5-60 drops per minute (60 drops per minute maximum).

(23) Operate pump unit (5 minutes minimum) long enough to inspect for the following:

(a) Unusual noise or vibration.

(b) Proper discharge pressure (85-100 psig) when operating a single 1-1/2 fire hose with nozzle.

(c) Leakage from pump or accessories other than shaft packing gland drip. Secure pump unit as required to correct causes of leakage in accordance with the technical manual.

(24) Inspect exhaust hose for leaks.

Note: Exhaust smoke should be clear or a "light" blue color after engine has warmed up and the pumping unit is discharging water. Continued appearance of "black" smoke is indicative of a fuel delivery or air flow restriction.

(25) Inspect exhaust smoke color.

(26) Secure the pump unit by loosening the throttle lever thumbscrew and moving the lever to the Stop position.

(27) Drain and flush the pump unit, return it to the state of readiness.

d. Test operate pump unit at a suction lift greater than 20 feet.

CAUTION

A high spot and/or close radius bend in suction line may form an air trap and prevent complete pump priming. Always attach suction hose to pump prior to placing hose in water.

(1) Attach 1-1/2 hose to eductor charging port, using 1-1/2 x 2-1/2 adapter if required, (refer to Figure 551-88L-2048_09).

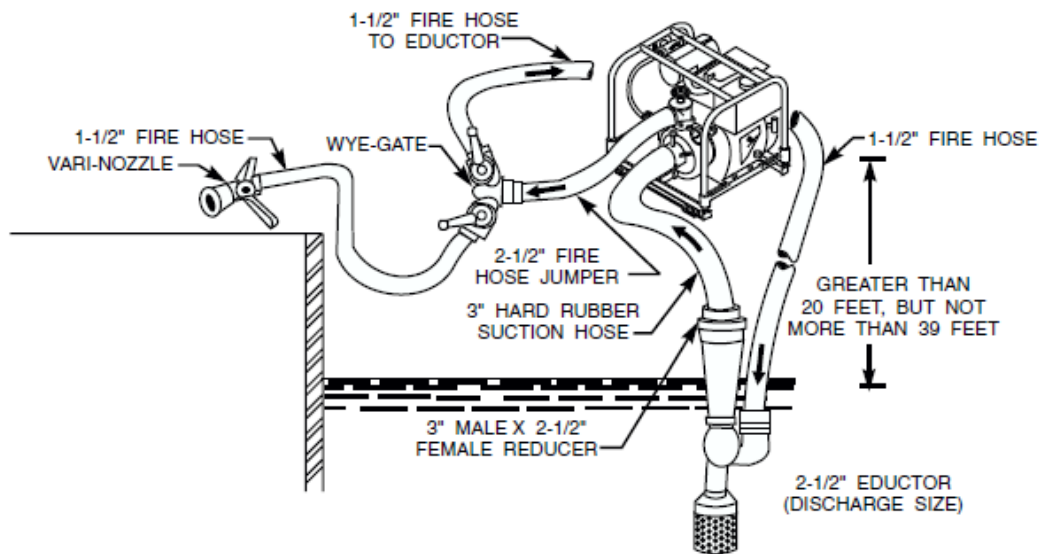


Figure 551-88L-2048_09
Suction lift greater than 20 feet

(2) Attach foot valve assembly to eductor inlet, using adapter if required.

(3) Using a spanner wrench, attach 3 suction line to eductor outlet connection, using adapter if required.

(4) Using spanner wrench, attach a 3 suction line to pump suction fitting. Suction line assembly must consist of required number of 10' lengths of suction hose, sufficient length of eductor charging hose and a foot valve/strainer unit and eductor on submerged end. Make sure all connections are secure. Carefully lower hoses into water making sure educator and foot valve/strainer unit remains submerged at least 1 foot throughout operating period. Make sure suction line slopes continuously downward from pump intake to water.

(5) Attach Tri-gate valve to pump discharge fitting. Tri-gate may be attached to pump discharge fitting by using a short 2-1/2 dia. x 18 extension hose.

(6) Attach eductor charging hose to one of the 1-1/2 Tri-gate discharge ports. Leave eductor charging line cut out valve on Tri-gate open.

(7) Ensure one 1-1/2 port of Tri-gate is closed and fill the eductor charging hose and suction hose with water from firemain or potable water source through the remaining port.

Note: 1-1/2 inch nozzles have a flow of 95 to 125 gpm at 100 psi.

(8) Attach a 1-1/2 hose with nozzle to Tri-gate valve.

(9) Ensure 1-1/2 Tri-gate shut off valve is closed.

WARNING

Do not operate pump in an enclosed area without exhaust hose connected and routed safely to outside atmosphere. Exhaust gases contain carbon monoxide, which is odorless and poisonous, and can cause injury or death when inhaled. High temperatures exist in vicinity of exhaust hose connection at engine and at exhaust hose discharge. Wear firefighters gloves at all times when handling exhaust hoses.

(10) If pump unit is to be operated in a poorly ventilated area, attach a maximum of 20' of insulated exhaust hose to exhaust fitting. Do not submerge discharge end of exhaust hose in water. Regularly check exhaust hose connections for leaks.

CAUTION

Fuel must be f-76 or jp-5, filtered clear and bright. Do not fill fuel tank beyond the top of the red plug inside the fuel tank strainer.

(11) Inspect engine fuel level. Fill if low. Do not overfill. Do not put oil in fuel tank.

CAUTION

Inspect engine oil level on a level surface with engine stopped. Checking oil level on a non-level surface will result in a false reading. Overfilling with oil will result in excessive oil consumption, high oil temperatures, possible crankcase explosion and engine damage. Insufficient oil levels will result engine seizure.

(12) Inspect engine oil level. Fill if low. Do not overfill.

(13) Close discharge valve at discharge head.

(14) Set fuel cutout valve at bottom of fuel tank to O (open) position.

(15) Place throttle lever so indicator is in START position and tighten thumbscrew.

Note: Primer shut-off valve is open when lever is in line with hoseline.

(16) Open primer line shut-off valve between primer ejector assembly and pump suction.

(17) Slowly pull out starter recoil handle until strong resistance is felt and return handle to initial position.

(18) Push down the compression release lever.

WARNING

Personnel shall wear approved hearing protective devices when engine is operating.

CAUTION

A strong deliberate pull is required to prevent engine kickback and possible starting in the reverse rotational direction. If this does occur, immediately shut down the engine. Operation in the reverse direction is characterized by the evidence of exhaust gases coming out of the intake filter. Reverse operation does not allow full power operation, positive priming, and will cause damage to the unit.

(19) Pull the recoil starting handle briskly with both hands to start engine.

(20) If engine does not start repeat steps 17 through 19. Once engine is running, set the throttle control to the RUN position.

Note: Start the engine and run at a fast idle to prime with lifts less than 10 feet. Start the engine and run at full throttle to prime with 10 to 22 foot lifts.

CAUTION

Do not continue to operate the pump unit if priming cannot be achieved within two minutes. Shutdown engine and troubleshoot for cause of failure to achieve prime.

(21) Shift the exhaust valve to the prime position blocking the main exhaust opening. The exhaust valve is in the prime position when the handle is horizontal.

(22) When a steady stream of water appears at the discharge of the priming jet, close the primer line shut-off valve and return the engine exhaust valve to the normal position. Open the pump discharge valve.

(23) Repeat the priming operation if the pump fails to hold its prime. If the pump does not deliver water within two minutes, stop the engine and check for air leaks at suction connections and/or the pump packing gland, or failure of the priming jet to produce vacuum.

CAUTION

Do not operate pump unit continuously without discharging water. Operation of the pump with a closed discharge valve will result in overheating of and damage to the pump. When operating with an eductor, recirculation of water through the eductor charging line is sufficient to ensure flow is maintained until water is discharged from the 1-1/2 hose and nozzle.

(24) Slowly open a single 1-1/2 hose discharge line on Tri-gate valve and discharge water from hose nozzle.

Note: Pump shaft packing drip rate should be 5-60 drops per minute (60 drops per minute maximum). Lower drip rate indicates excessive tightening of pump shaft packing. Higher drip rate indicates insufficient packing adjustment.

CAUTION

Observe exhaust smoke color after priming has been achieved and pump is discharging water. Exhaust smoke color should become clear or light bluish as the engine warms up. In high load situations, the continued appearance of black exhaust smoke after the engine has warmed up indicates overfueling of the engine. Overfueling of the engine will cause fuel dilution of the lube oil and engine damage with continued operation. Adjustment of the throttle to reduce engine load is required if evidence of engine overfueling is observed.

(25) Observe pump shaft packing drip rate with pump unit discharging water. Packing drip rate should be 5-60 drops per minute (60 drops per minute maximum).

(26) Operate pump unit (5 minutes minimum) long enough to inspect for the following:

(a) Unusual noise or vibration.

(b) Proper discharge pressure (minimum 45 psig) when operating a single 1-1/2 fire hose with nozzle.

(c) Leakage from pump or accessories other than shaft packing gland drip. Secure pump unit as required to correct for causes of leakage in accordance with the technical manual.

(27) Inspect exhaust hose for leaks.

Note: Exhaust smoke should be clear or a "light" blue color after engine has warmed up and the pumping unit is discharging water. Continued appearance of "black" smoke is indicative of a fuel delivery or air flow restriction.

(28) Inspect exhaust smoke color.

(29) Secure the pump unit by loosening the throttle lever thumbscrew and moving the lever to the Stop position.

(30) Drain and flush the pump unit, return it to the state of readiness.

(Asterisks indicates a leader performance step.)

Evaluation Preparation: None

PERFORMANCE MEASURES	GO	NO-GO	N/A
1. Performed operational maintenance.			
a. Drained and flushed pump unit.			
b. Visually inspected pump unit.			
c. Inspected idle equipment.			
d. Lubricated pump unit.			
2. Performed daily maintenance.			
a. Selection of fuel oil.			
b. Checked fuel oil.			
c. Checked lube oil.			
3. Performed maintenance every month or 20 hours of operation.			
a. Drained fuel oil tank.			
b. Checked for oil leakage.			
4. Performed maintenance every 3 months or 100 hours of operation.			
a. Changed engine lube oil.			
b. Checked air cleaner element.			
5. Performed maintenance every 6 months or 500 hours of operation.			
a. Cleaned fuel tank strainer and fuel filter.			
b. Changed air cleaner element.			
c. Cleaned lube oil strainer.			
6. Performed maintenance every 12 months or 1000 hours of operation.			
a. Replaced fuel filter.			
b. Tested pump unit at suction lift less than 20 feet.			
c. Tested pump unit at suction lift greater than 20 feet.			

Supporting Reference(s):

Step Number	Reference ID	Reference Name	Required	Primary
	S6226-NM-MMC-010/15852	Technical Manual for (SGML VERSION; SEE CHANGE RECORD), CHAMPION PORTABLE FIRE PUMP P-100 (2BE10YDN)	No	No

Environment: None

Safety: In a training environment, leaders must perform a risk assessment in accordance with FM 5-19, Composite Risk Management. Leaders will complete a DA Form 7566 COMPOSITE RISK MANAGEMENT WORKSHEET during the planning and completion of each task and sub-task by assessing mission, enemy, terrain and weather, troops and support available-time available and civil considerations, (METT-TC). Note: During MOPP training, leaders must ensure personnel are monitored for potential heat injury. Local policies and procedures must be followed during times of increased heat category in order to avoid heat related injury. Consider the MOPP work/rest cycles and water replacement guidelines IAW FM 3-11.4, NBC Protection, FM 3-11.5, CBRN Decontamination.

Prerequisite Individual Tasks : None

Supporting Individual Tasks :

Task Number	Title	Proponent	Status
551-88L-1031	Demonstrate Basic Knowledge of a Portable Fire Pump	551 - Transportation (Individual)	Analysis

Supported Individual Tasks :

Task Number	Title	Proponent	Status
551-88L-1031	Demonstrate Basic Knowledge of a Portable Fire Pump	551 - Transportation (Individual)	Analysis

Supported Collective Tasks :

Task Number	Title	Proponent	Status
N/A	N/A	Not Selected	Obsolete